AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 – 20 (Cancelled)

Claim 21 (New) An apparatus for producing electromagnetic radiation, the apparatus comprising

a superluminescent light-emitting diode the superluminescent light emitting diode comprising a semiconductor heterostructure forming a PN junction and a waveguide defining an optical beam path,

the heterostructure including a gain region and an absorber region in series with the gain region in the optical beam path,

a first contact for applying a voltage to the PN junction in its forward direction in the in the gain region, so as to produce light emission from the gain region and along the optical beam path,

and a second contact contacting the PN junction in the absorber region, the second contact forming a permanent electrical contact between a P doped side and an N doped side of the PN junction in the absorber region, so that

the PN junction in the absorber region is unbiased,

the apparatus further comprising a housing carrying the superluminescent light-emitting diode, the housing comprising a symmetry axis, wherein said optical beam path is parallel to said symmetry axis.

Claim 22 (New) The apparatus according to claim 21, wherein said second contact includes a wire contact between a layer having the electrical potential of the P side and a layer having the electrical potential of the N side.

Claim 23 (New) The apparatus according to claim 21, wherein the PN junction comprises an n-doped side and a p-doped side, and wherein at least one of the n-doped side and the p-doped side is connected, by the second contact, to a metallic surface outside the heterostructure.

Claim 24 (New) The apparatus according to claim 21, wherein the waveguide comprises two end facets, limiting the waveguide structure in a longitudinal direction parallel to the optical beam path, the end facets being perpendicular to the optical beam path.

Claim 25 (New) The apparatus according to claim 21, wherein the PN junction in the gain region and in the absorber region is a bulk PN junction comprising a p-doped component and an n-doped component, both having a layer thickness exceeding 10 nm.

Claim 26 (New) The apparatus according to claim 21, wherein the semiconductor heterostructure in the gain region includes a multiple quantum well (MQW) structure and wherein the PN junction is formed in said multiple quantum well structure, or wherein the semiconductor heterostructure in the gain region includes quantum wires or quantum dots.

Claim 27 (New) The apparatus according to claim 21, wherein the waveguide is index guided.

Claim 28 (New) The apparatus according to claim 21, wherein the waveguide is gain guided.

Claim 29 (New) The apparatus according to claim 21, wherein the semiconductor heterostructure comprises a first cladding layer and a second cladding layer, the PN junction comprises a PN-junction layered structure between the first and the second cladding layer, the PN-junction layered structure comprises a single quantum well structure or a multiple quantum well structure or a bulk layer of a p-doped material and a bulk layer of an n-doped material, the heterostructure further comprises the first cladding layer being in electrical contact to a first metal electrode, the second cladding layer being in electrical contact to a second metal electrode, the first metal electrode or the second metal electrode or both metal electrodes being interrupted between the gain region and the absorber region.

Claim 30 (New) The apparatus according to claim 21, wherein said housing is a TO-can.

Claim 31 (New) The apparatus according to claim 21, wherein superluminescent light-emitting diode is placed centrally in the housing and the beam path coincides with the symmetry axis.

Claim 32 (New) The apparatus according to claim 21, wherein the housing comprises a disk-shaped body with two parallel facets, the symmetry axis being a symmetry axis of said body and being perpendicular to said facets, the housing further comprising electrical contacts penetrating the body in the direction of the symmetry axis, the superluminescent light emitting diode being provided in a semiconductor chip attached to a facet of said body.

Claim 33 (New) The apparatus according to claim 32, wherein the beam path is concentric with the disc-shaped body.

Claim 34 (New) The apparatus according to claim 21, further comprising monitoring means for monitoring a photocurrent generated by radiation emitted in the gain region and absorbed in the absorber region of the PN junction, thereby producing a monitoring signal being a measure of the light emitted in the gain region.